



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING

SEMESTER 1 2024/2025

SECR1213 – NETWORK COMMUNICATIONS

SECTION 12

PROJECT TASK 5

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GROUP 12.1 (POWERPUFF)

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5.1 Get the Network Address from your lecturer

Table 5.1.1 IP Addressing Scheme

Group	Network Address
4.1	192.120.0.0/8
4.2	192.122.0.0/8
4.3	192.124.0.0/8
4.4	192.126.0.0/8
4.5	192.128.0.0/8
4.6	192.130.0.0/8
4.7	192.132.0.0/8
4.8	192.134.0.0/8
4.9	192.136.0.0/8
4.10	192.138.0.0/8
9.1	192.140.0.0/8
9.2	192.142.0.0/8
9.3	192.144.0.0/8
9.4	192.146.0.0/8
9.5	192.148.0.0/8
9.6	192.150.0.0/8
9.7	192.152.0.0/8
9.8	192.154.0.0/8
9.9	192.156.0.0/8
9.10	192.158.0.0/8
12.1	192.160.0.0/8
12.2	192.162.0.0/8
12.3	192.164.0.0/8
12.4	192.166.0.0/8
12.5	192.168.0.0/8
12.6	192.170.0.0/8

Table 5.1.1 shows the list of network addresses for each group. The network address of our group (Group 12.1) is 192.160.0.0/8 with a subnet mask of 255.0.0.0.

Network Address details:

IP address (decimal)	192.160.0.0
IP address (binary)	11000000. 10100000.00000000.00000000
Subnet Mask(decimal)	255.0.0.0
Subnet Mask(binary)	11111111.00000000.00000000.00000000

With the subnet mask, we divided the subnet mask into the network portion (8 bits) and host portion (24 bits). After implementing the AND operation of the IP address with the subnet mask, we identified the network address as 192.0.0.0 and the broadcast address as 192.255.255.255. The range of usable addresses within the building is 192.0.0.1 - 192.255.255.254.

Network address	192.0.0.0
Broadcast address	192.255.255.255
Range of usable addresses	192.0.0.1 - 192.255.255.254

5.2 Divide it in the best possible way for your network

5.2.1 Network distribution for different work area

192.160.0.0/8 need to be divided into 8 subnets

However, the subnet mask only indicates 8 bits of network portion, thus needing to borrow 3 bits from the host portion to define 8 subnets.

192.160.0.0/8 → network portion 1100 0000. 1010 0000. 0000 0000. 0000 0000
Subnet address → 1100 0000. 0000 0000. 0000 0000. 0000 0000
Borrow 3 bits from host portion

192. [0000 0000. 0000 0000. 0000 0000] [0001 1111. 1111 1111. 1111 1111]	Subnet 0, network address= 192. 0. 0. 0
192. [0010 0000. 0000 0000. 0000 0000] [0011 1111. 1111 1111. 1111 1111]	Subnet 1, network address= 192. 32. 0. 0
192. [0100 0000. 0000 0000. 0000 0000] [0101 1111. 1111 1111. 1111 1111]	Subnet 2, network address= 192. 64. 0. 0
192. [0110 0000. 0000 0000. 0000 0000] [0111 1111. 1111 1111. 1111 1111]	Subnet 3, network address= 192. 96. 0. 0
192. [1000 0000. 0000 0000. 0000 0000] [1001 1111. 1111 1111. 1111 1111]	Subnet 4, network address= 192. 128. 0. 0
192. [1010 0000. 0000 0000. 0000 0000] [1011 1111. 1111 1111. 1111 1111]	Subnet 5, network address= 192. 160. 0. 0
192. [1100 0000. 0000 0000. 0000 0000] [1101 1111. 1111 1111. 1111 1111]	Subnet 6, network address= 192. 192. 0. 0
192. [1110 0000. 0000 0000. 0000 0000] [1111 1111. 1111 1111. 1111 1111]	Subnet 7, network address= 192. 224. 0. 0

5.2.1 Network distribution for different work area

Distribution of subnet for different work area:

Subnet	Work Area	Network Address	Broadcast Address	Range of usable address
Ground Floor				
0	General Purpose Lab 1	192.0.0.0	192.31.255.255	192.0.0.1-192.31.255.254
1	General Purpose Lab 2	192.32.0.0	192.63.255.255	192.32.0.1-192.63.255.254
2	Cisco Network Lab	192.64.0.0	192.95.255.255	192.64.0.1-192.95.255.254
3	Embedded Lab	192.96.0.0	192.127.255.255	192.96.0.1-192.127.255.254
First Floor				
4	Server Room	192.128.0.0	192.159.255.255	192.128.0.1-192.159.255.254
5	Hybrid Classroom	192.160.0.0	192.191.255.255	192.160.0.1-192.191.255.254
6	Video Conferencing Room	192.192.0.0	192.223.255.255	192.192.0.1-192.223.255.254
7	Lecturer Offices	192.224.0.0	192.255.255.255	192.224.0.1-192.255.255.254

5.2.2 Network distribution for workstation in different work areas.

Ground Floor:

1. General Purpose Lab 1:

Devices	IP Address
PC1	192.0.0.1
PC2	192.0.0.2
PC3	192.0.0.3
PC4	192.0.0.4
PC5	192.0.0.5
PC6	192.0.0.6
PC7	192.0.0.7
PC8	192.0.0.8
PC9	192.0.0.9
PC10	192.0.0.10
PC11	192.0.0.11
PC12	192.0.0.12
PC13	192.0.0.13
PC14	192.0.0.14
PC15	192.0.0.15
PC16	192.0.0.16
PC17	192.0.0.17
PC18	192.0.0.18
PC19	192.0.0.19

PC20	192.0.0.20
PC21	192.0.0.21
PC22	192.0.0.22
PC23	192.0.0.23
PC24	192.0.0.24
PC25	192.0.0.25
PC26	192.0.0.26
PC27	192.0.0.27
PC28	192.0.0.28
PC29	192.0.0.29
PC30	192.0.0.30
PC31	192.0.0.31
PC32	192.0.0.32
WAP1	192.0.0.33
Switch	192.0.0.34

2. General Purpose Lab 2:

Devices	IP Address
PC33	192.32.0.1
PC34	192.32.0.2
PC35	192.32.0.3
PC36	192.32.0.4
PC37	192.32.0.5
PC38	192.32.0.6

PC39	192.32.0.7
PC40	192.32.0.8
PC41	192.32.0.9
PC42	192.32.0.10
PC43	192.32.0.11
PC44	192.32.0.12
PC45	192.32.0.13
PC46	192.32.0.14
PC47	192.32.0.15
PC48	192.32.0.16
PC49	192.32.0.17
PC50	192.32.0.18
PC51	192.32.0.19
PC52	192.32.0.20
PC53	192.32.0.21
PC54	192.32.0.22
PC55	192.32.0.23
PC56	192.32.0.24
PC57	192.32.0.25
PC58	192.32.0.26
PC59	192.32.0.27
PC60	192.32.0.28
PC61	192.32.0.29
PC62	192.32.0.30

PC63	192.32.0.31
PC64	192.32.0.32
WAP2	192.32.0.33
Switch	192.32.0.34

3. Cisco Network Lab:

Devices	IP Address
PC65	192.64.0.1
PC66	192.64.0.2
PC67	192.64.0.3
PC68	192.64.0.4
PC69	192.64.0.5
PC70	192.64.0.6
PC71	192.64.0.7
PC72	192.64.0.8
PC73	192.64.0.9
PC74	192.64.0.10
PC75	192.64.0.11
PC76	192.64.0.12
PC77	192.64.0.13
PC78	192.64.0.14
PC79	192.64.0.15
PC80	192.64.0.16






















PC81	192.64.0.17
PC82	192.64.0.18
PC83	192.64.0.19
PC84	192.64.0.20
PC85	192.64.0.21
PC86	192.64.0.22
PC87	192.64.0.23
PC88	192.64.0.24
PC89	192.64.0.25
PC90	192.64.0.26
PC91	192.64.0.27
PC92	192.64.0.28
PC93	192.64.0.29
PC94	192.64.0.30
PC95	192.64.0.31
PJ1	192.64.0.32
WAP3	192.64.0.33
Switch 3	192.64.0.34

4. Embedded Lab:

Devices	IP Address
PC96	192.96.0.1
PC97	192.96.0.2
PC98	192.96.0.3

PC99	192.96.0.4
PC100	192.96.0.5
PC101	192.96.0.6
PC102	192.96.0.7
PC103	192.96.0.8
PC104	192.96.0.9
PC105	192.96.0.10
PC106	192.96.0.11
PC107	192.96.0.12
PC108	192.96.0.13
PC109	192.96.0.14
PC110	192.96.0.15
PC111	192.96.0.16
PC112	192.96.0.17
PC113	192.96.0.18
PC114	192.96.0.19
PC115	192.96.0.20
PC116	192.96.0.21
PC117	192.96.0.22
Switch 4	192.96.0.23
Switch 5	192.96.0.24

Ground Floor with Label

Indicators:	
	Desk – 90cm x 70cm (General Purpose Lab and Embedded Lab)
	Desk – 6cm x 20cm (Cisco Network Lab)
	Desk – 80cm x 80cm (Cisco Network Lab)
	Desk – 100cm x 50cm (Embedded lab)
	Round Table - 80cm x 90cm
	Round Table - 200cm x 220cm
	Laptop -48cmx 30cm
	Chair – 40cm x 43cm
	Window – 70cm x 120cm
	Door – 80cm x 85cm
	Slide door – 150cm x 30cm
	Door - 200cm x cm
	Sink – 70cm x 65cm
	Air Conditioner – 99.8cm x 34.5cm
	Bookcase – 100cm x 30cm
	Toilet Bowl – 60cm x 80cm
	Smartboard – 221.6cm x 131.6cm (General Purpose Lab)
	Flat TV – 90cm x 20cm (Cisco Network Lab and embedded lab)
	Vending machine – 74cm x 65cm
	Flowerpot – 40cm x 51cm
	Wireless Access Point-43cm x50cm



First Floor:

1. Server Room:

Device	IP Address
SV1	192.128.0.1
SV2	192.128.0.2
Router1	192.128.0.3
Router2	192.128.0.4
Router3	192.128.0.5
Router4	192.128.0.6
Router5	192.128.0.7

2. Lecturer Office:

Devices	IP Address
PC118	192.224.0.1
PC119	192.224.0.2
PC120	192.224.0.3
PC121	192.224.0.4
PC122	192.224.0.5
PC123	192.224.0.6
PC124	192.224.0.7
PC125	192.224.0.8
PC126	192.224.0.9

PC127	192.224.0.10
PC128	192.224.0.11
PC129	192.224.0.12
PC130	192.224.0.13
PC131	192.224.0.14
WAP4	192.224.0.15
Switch 6	192.224.0.16

3. Video Conferencing Room:

Device	IP Address
SB3	192.192.0.1
Switch 7	192.160.0.44

4. Hybrid Classroom:

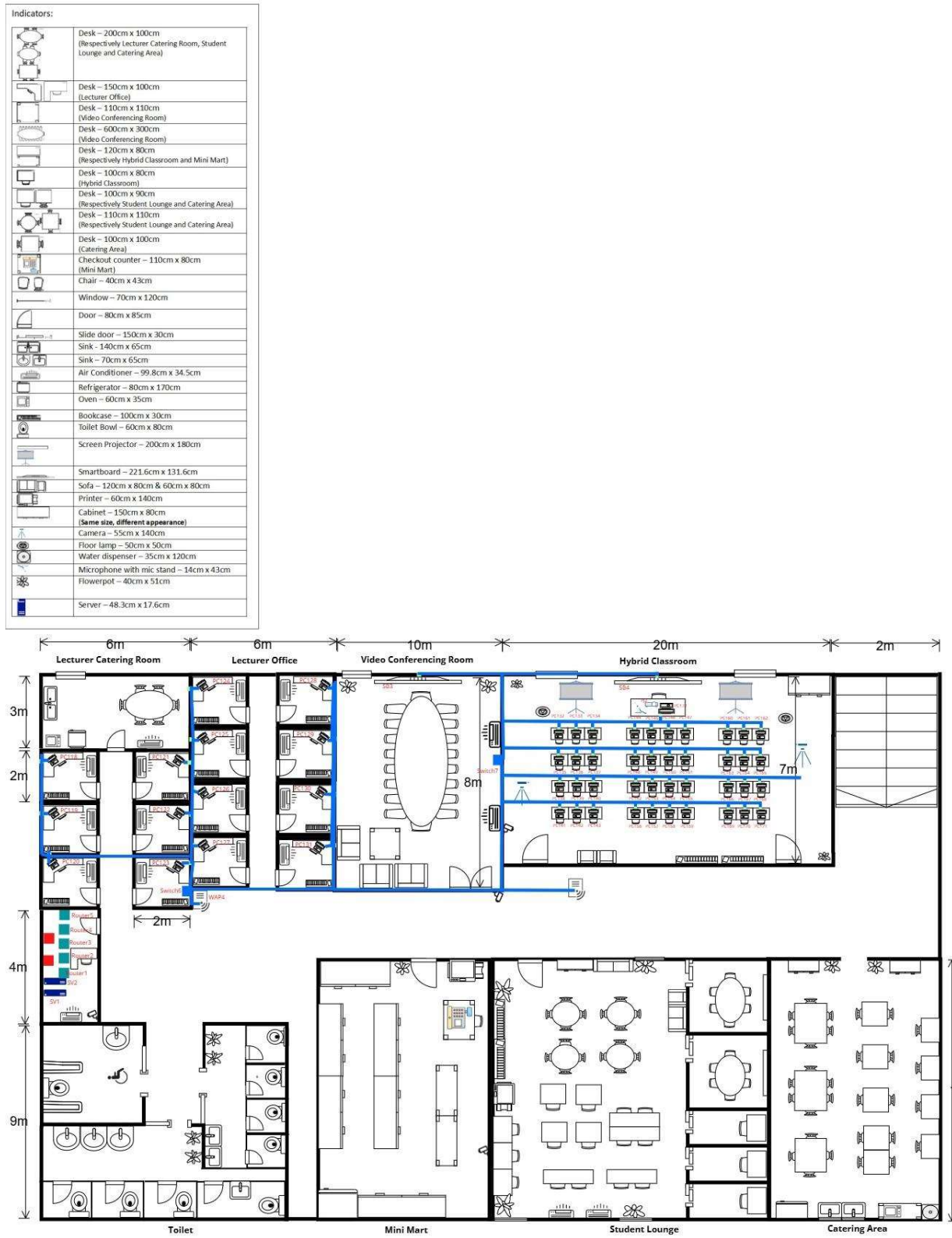
Device	IP Address
PC132	192.160.0.1
PC133	192.160.0.2
PC134	192.160.0.3
PC135	192.160.0.4
PC136	192.160.0.5
PC137	192.160.0.6

PC138	192.160.0.7
PC139	192.160.0.8
PC140	192.160.0.9
PC141	192.160.0.10
PC142	192.160.0.11
PC143	192.160.0.12
PC144	192.160.0.13
PC145	192.160.0.14
PC146	192.160.0.15
PC147	192.160.0.16
PC148	192.160.0.17
PC149	192.160.0.18
PC150	192.160.0.19
PC151	192.160.0.20
PC152	192.160.0.21
PC153	192.160.0.22
PC154	192.160.0.23
PC155	192.160.0.24

PC156	192.160.0.25
PC157	192.160.0.26
PC158	192.160.0.27
PC159	192.160.0.28
PC160	192.160.0.29
PC161	192.160.0.30
PC162	192.160.0.31
PC163	192.160.0.32
PC164	192.160.0.33
PC165	192.160.0.34
PC166	192.160.0.35
PC167	192.160.0.36
PC168	192.160.0.37
PC169	192.160.0.38
PC170	192.160.0.39
PC171	192.160.0.40
PC172	192.160.0.41
PJ2	192.160.0.42

SB4	192.160.0.43
WAP5	192.160.0.44

First Floor with Label



Meeting Minutes #1

DATE/TIME		24 Jan 2025 9am	
LOCATION		Online (Google Meet)	
AGENDA		1. Understand the detail about task 5 2. Discuss the way to divide the subnet. 3. Distribute task to all members	
Meeting MC		Chua Jia Lin	
ATTENDANCE			
NAME		TIME	REASON FOR ABSENCE
Lau Yee Wen		9:00AM	-
Cheryl Cheong Kah Voon		9:00AM	-
Chua Jia Lin		9:00AM	-
Gui Kah Sin		9:00AM	-
MINUTES			
NO.	ITEM DISCUSSED	IDEAS/SUGGESTIONS AND PERSON GIVING IT	PERSON IN CHARGE & DATE
1	Discuss details about task 5	<ul style="list-style-type: none">- Each member opened the Word document of project Task 5 on their devices.- All members read the question and rubric together.- The team started a discussion to understand the requirements for Task 5.	All members
2	Suggestion for subnet division	<ul style="list-style-type: none">- All members suggest their preferred subnet division- All members discuss and decide on the one that best suits our design.	All members
3	Task Distribution	<ul style="list-style-type: none">- Cheryl distributed the task to all members.- Jia Lin was assigned to identify the network address details from the network address assigned to our group.- Kah Sin was assigned to distribute the IP addresses for each work area.	All Members

		- Cheryl and Yee Wen were assigned to distribute the IP addresses for each workstation of each work area.	
5	Meeting ended	At 10:15 am, the meeting ended after all discussions had been done.	All Members